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VOLUME III.

No. IX.

[WHOLE No. 33.]

OPERATION FOR CLOSURE OF CLEFT OF  
THE HARD AND SOFT PALATE.

BY

A. VANDERVEER, M.D.

PROFESSOR OF THE PRINCIPLES AND PRACTICE OF SURGERY, ALBANY MEDICAL  
COLLEGE; ATTENDING SURGEON AT THE ALBANY HOSPITAL AND  
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# OPERATION FOR CLOSURE OF CLEFT OF THE HARD AND SOFT PALATE.

BY A. VANDERVEER, M. D.

Professor of the Principles and Practice of Surgery, Albany Medical College. Attending Surgeon at the Albany Hospital and St. Peter's Hospital.

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GENTLEMEN :—During the past term we have had a large number of cases at our surgical clinics, illustrating what we early called your attention to—viz: the aid we can render Nature in curing surgical diseases.

To-day, I wish to speak of the equally important assistance that can be given Nature in curing her defects.

The subject is Cleft of the Hard and Soft Palate. As you observe, we have some excellent cases to exhibit. This subject is one that has occupied the attention of the master minds in our profession, both in this country and in the old world, and each can claim a good degree of success. This is not the kind of a lecture to admit of our entering into the details of the history of the operation. It is enough to know that such men as Roux, Dieffenbach, Langenbeck, Pollock, Simon, and Sir Wm. Fergusson of the old world gave years of labor to the study of the proper manner of performing the operation, in order to bring about the best results; and that in our own country, no mind has towered above that of the excellent,

wise and good American surgeon, Dr. J. Mason Warren, of Boston, in the study and performance of the operation. As far back as 1843, by his published cases, he gave a stimulus to the study of the subject that has resulted in great good.

The operation has ever been a difficult one to perform ; yet the desire to relieve so serious a deformity has been so great, that now, the exertions and successes of Fergusson and others, each of whose attempts seem to have advanced the operation one step nearer perfection, no longer leave room for doubt that it lies in the power of the surgeon to do more for the relief of these cases than can be done by any other method, artificial or otherwise.

In these two little patients whom I show you to-day, we have strong cases to illustrate the pathology, the definition of the lesion and its complications.

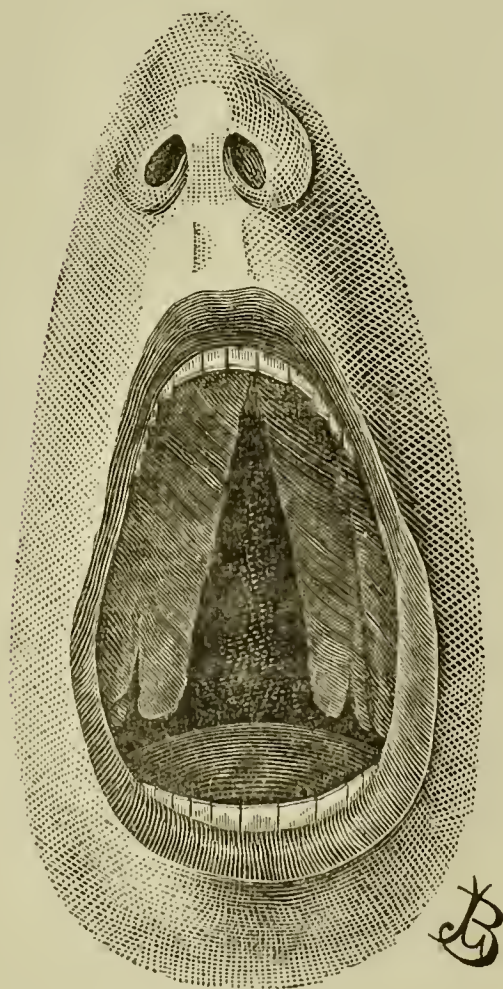


FIG 1.

Of the deformity known as Simple Harelip, you have had a goodly number of cases presented during the term, and I shall say but little upon the subject, except as it refers to the two cases before you.

By Cleft of the Hard and Soft Palate is meant that condition wherein there is a fissure, more or less extensive, of the bony roof of the mouth, extending posteriorly through the soft palate. It may be more or less complete, but generally extends through the entire structures as seen in this illustration from

one of my own cases. (See Fig. I.) The fissure in the hard palate may extend anteriorly through the centre of the alveolar ridge of the jaw, or it may extend to the right or the left of the median line: it may so extend as to become a fissure on each side of the nose, leaving the intermaxillary bone in the middle as an island, as seen here in the case of this little boy. Again, it may be such as to include the vomer decidedly to the right or to the left, and this, when well-marked, complicates the operation for bringing together the solid bone. This is a point you must bear well in mind, in doing what is called the Fergusson operation.

All cases of this deformity arrange themselves into two classes, either congenital or acquired, and this classification must be considered in deciding upon the kind of operation to be performed. Certain families seem to show a proneness to this deficiency, the deformity being transmitted from one generation to another, until as many as three generations have been known to be affected. Sometimes several children, two, three or four in the same family, will be afflicted as in the cases before you.

The lesion is plainly an arrest of development. Nature fails to do her work fully. She brings the parts up to a certain point and then stops, leaving the union of the two halves as originally intended, unaccomplished. Take for example this boy, aged five years. We have here a complete fissure in the roof of the mouth extending up into the nostrils, so that we can see the turbinated bones. The fissure extends anteriorly through the alveolar ridge on each side of the intermaxillary bone, so that we have the latter as an island protruding forward, and upward, presenting the most frightful kind of deformity, and one the most dangerous in the infant, from the great difficulty met with in feeding and sustaining life. Posteriorly, the fissure extends completely through the soft palate, splitting it into two equal portions. The vomer is carried rather more to the left,



and what is somewhat singular, the fissure in the angle of the soft parts of the nose extends much further up on this side.

Now observe the little girl, a sister of the boy, aged eighteen months. She has a cleft of the hard and soft palate almost precisely similar, only that it extends simply through the alveolar ridge near the left nostril, and is complicated with slightly double harelip. The mother says she has one child older than either of these and one between, both of whom are perfect. You may observe about the mother a slight depression in the vermilion border of the upper lip ; so sure was I that she had been born with harelip, that I asked her at once when she had been operated upon. I was wrong, however, in my surmise, and she farther told me that no ancestors, either of herself or her husband, had been known to suffer from this defect. It has been said that maternal impression has been the cause in some cases, and I find, on making inquiry, that this mother believes somewhat in this as the cause with her children.

These two cases have been brought here to-day for our advice, and if an operation is decided upon, to have it done. The children have been a great care to their mother. Although the boy now succeeds well in feeding himself, the girl or rather babe still requires a great deal of attention. Children born with this defect as you know cannot nurse, and in the great majority of cases must be fed for a long time from the spoon. In many instances the arrest in development of the organs of deglutination is so great, as to actually prevent the babe from swallowing sufficient food to sustain life, the serious disturbance to nutrition being frequently a cause of death.

And then as to the voice : Observe how difficult it is for this little boy to talk so as to be understood. The nasal tone is such, in fact the loss of voice is so great, as to prove a constant source of annoyance.

Children who are allowed to grow up with this deformity are



kept from society and from the study of the professions.

Of all the ills to which, through accident or disease, the human family are subject, there is scarcely any, in my estimation, that calls for more earnest, patient study on the part of the surgeon, for its relief. These two cases may be looked upon as true cases of congenital cleft.

Acquired cleft is where, through accident or disease, we have an opening of greater or less extent in the hard or soft palate. I shall speak of this farther on in our lecture.

A word as to the time of doing the operation as regards the age of the patient ; also as to the associate complications. I have now done the operation sufficiently often to warrant my saying that, as regards age, the best time to operate is between the second and third years. At this age the child makes every effort to talk and, in so doing, acquires the nasal tone which afterward is so difficult to overcome. Therefore, I believe in an early operation that the parts may be put in as good condition as possible for the use of the voice.

In regard to the complications of single and double harelip, I would say that, were it not that very young children bear the loss of blood poorly, it would be well, when operating for the cure of the above deformity, to also close the cleft in the hard and soft palate. But this is impossible, so we consider which operation shall precede in the cases before us. In that of the boy, were it not for the large intermaxillary bone that presents as a wedge, I should be inclined to operate for closure of the entire cleft and let the double harelip remain for a future operation. The mouth now gives us better space for working within than it will after the lip is operated on ; but, on the other hand, there is an advantage in operating on the lip first, and that is, that, if successful, the sides of the fissure are brought nearer together. In view of this latter fact, we have decided to operate on the lip in each of these two cases to-day, and to

postpone the operation on the cleft for another year, when, in the case of the boy, all the good that the soft parts can do in approximating the fissure will have been accomplished ; and, in addition, in the case of the girl, what we consider the proper age for doing the cleft operation will have been reached. In this opinion, my colleague, Professor Ward, coincides.

The operation on the girl will be for simple harelip ; in the boy's case, we have more to give us anxiety and to exercise our judgment. In the majority of cases where we have this intermaxillary bone presenting as an island, it is better to preserve it and attach the lip to it on each side, after making efforts to press or bring it back on a level with the alveolar ridge or the upper jaw. When the harelip exists on both sides, my experience teaches me in operating that it is best to operate on only one side at a time ; but in the case of this boy, the island is so very prominent, and ossification so far advanced that we shall have to remove a portion of the projecting bony substance, having in it the two middle incisors of the temporary, and the sacs of the corresponding teeth of the permanent set, and will then be able to bring the soft parts of the lip directly together in one operation. As we shall do here, always save what you can of the skin and periosteum covering the island. As you observe, after loosening up these tissues, we remove the bony portion with the curved bone forceps, controlling the deep hemorrhage (which is sometimes very severe) by applications of ice, and then bringing the fissures together in the ordinary manner by use of harelip pins and figure-of-eight silk suture. This, you see, now after the operation, has had an effect to narrow the appearance of the face very much, and has already in a wonderful manner improved his looks.\* Perhaps it is well to repeat to you in connection with these cases what we have

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\* This patient made an excellent recovery and result.



already said when speaking of simple harelip, to operate as early as possible, possibly within a week after birth, not later than the end of the second month ; this I would advise you to do upon the single or double harelip when associated with cleft of the hard and soft palate. If the operation is a success, it gives the child a better chance to take its nourishment, and brings the fissure as close as possible for operation at the time we have stated.

Now as to the steps in the operation for closure of cleft in the hard and soft palate. In a few days I shall be able to show you a girl aged five years, and a boy four years old, upon whom I have recently operated by what is known as the Fergusson method.

The accompanying drawings will illustrate to you the different stages of the operation. I am indebted to the kindness and artistic skill of my colleague, Professor Balch, for their truthfulness.

Briefly, concerning the methods employed by different operators, Roux aimed particularly to bring together the soft palate by paring the edges and then introducing the sutures. An improvement on his method was introduced by Dieffenbach, of Berlin, which consisted in relieving the dangerous tension upon the stitches by making linear incisions in the soft parts. This method was also improved upon by Professors Pancoast, of Philadelphia ; Pollock and Fergusson, of London, and Sédillot, of Strasburg. But the greatest advance that was made about this time in the performance of the operation, was by Dr. Warren, of Boston, whose improvement consisted in forming periosteal flaps, by dissecting up the periosteum from each side the cleft in the hard palate. He, too, was among the first to make use of the lateral incisions in the soft palate. Langenbeck used the periosteal flaps, making a more decided effort to close the cleft in the hard palate than did Warren, the latter being content to close the fissure in the soft palate

and leaving the opening in the hard palate to be closed by the obdurator.

Fergusson, who now became the most earnest worker of any in this branch of surgery, by his dissections and investigations, conceived and successfully carried out the idea of bringing the bone itself together, by splitting it loose from the alveolar ridge, thus accomplishing what had been his aim, and that of many other surgeons,—the closure of the entire cleft in such a manner as to secure for the patient a perfect, solid and fixed arch, coming as near as possible, to what Nature originally intended. This, the Sir Wm. Fergusson method, is what I wish to speak of to-day. He seems to have made the most decided progress of any modern surgeon, and, although innocently carrying out an idea advanced many years previous by Dieffenbach (without ever having been done by the latter, however,) has left us a record of experience in a list of over three hundred cases, and a knowledge how to do the operation for which we have great cause to be thankful. It seems scarcely necessary to advance any argument in favor of this operation, as compared with the use of the obdurator, (which has ever seemed a reflection on surgery in this particular,) when we consider how much greater is the relief afforded by a permanent condition, than can be given by a merely temporary one, as we must term the state the patient is in, when seeking a cure for congenital cleft by means of the obdurator. I would reserve the use of the obdurator for cases of acquired cleft only.

Dr. Warren was of the opinion that anæsthetic could never be given in this operation ; but it has been shown that chloroform is perfectly safe. Children come under its influence quickly, and you can begin the operation promptly, that is, it does not cause vomiting as ether does. Sir Wm. Fergusson was in favor of the use of chloroform, and gave it in his operations of this



kind. In keeping the mouth open during the operation a gag is employed. You see here what is known as the Wood gag. A modification called the Smith gag has simply in addition the tongue depressor. Here we have Fergusson's side gag and the Whitehead gag, invented by Dr. Whitehead, of New York. This latter is, I think, the best in use. Before the child is to

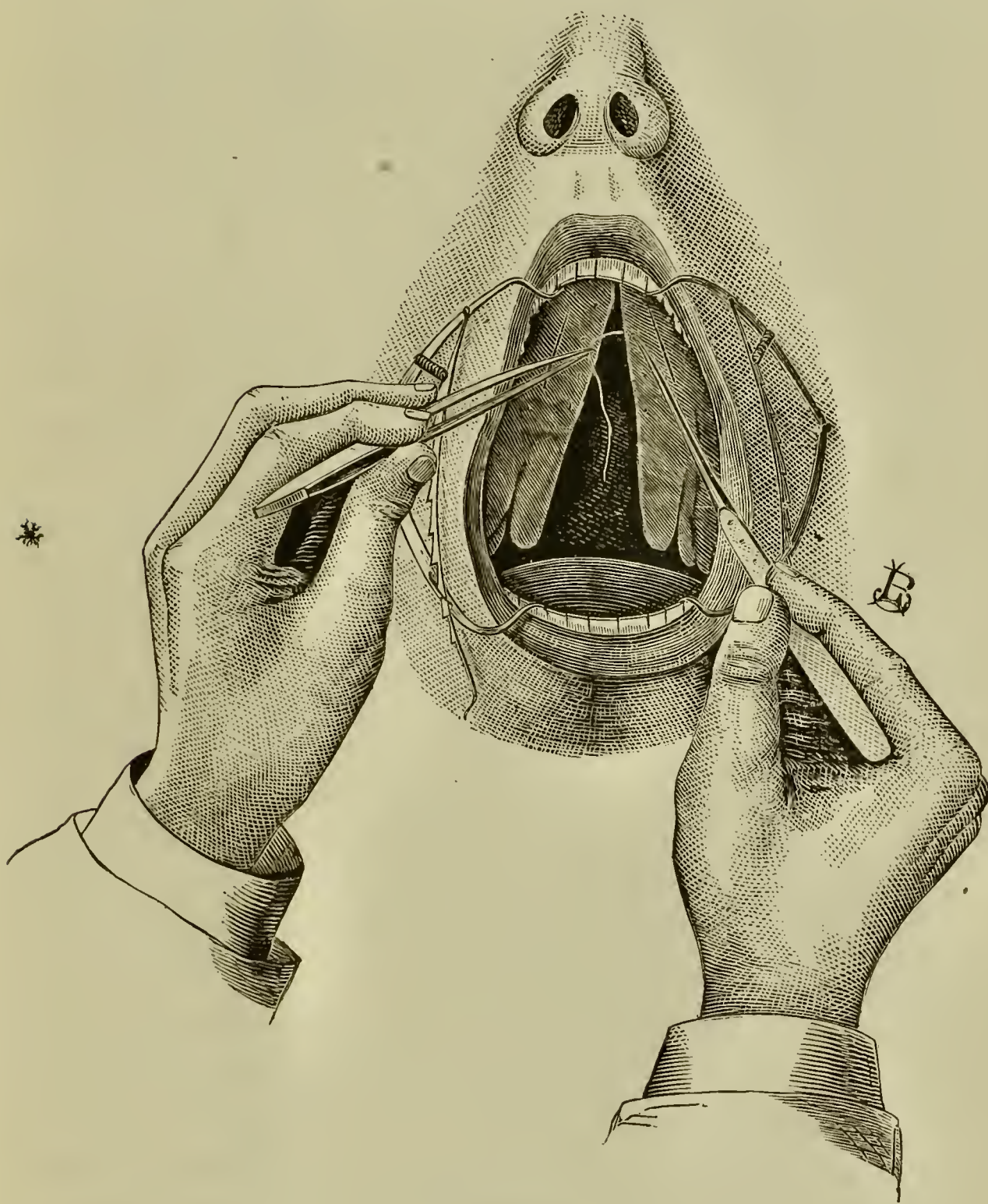


FIG. II.

be operated upon, directions should be given that no specially solid food be taken for a period of twenty-four hours previous. When the anæsthetic takes effect, the gag should be introduced as shown in the illustration. (See Fig. II.) You should have ready a number of sponges, with at least a dozen good sponge-holders, long enough to reach well back in the pharynx. It is necessary too, to have a bowl of cracked ice near, in which to dip the sponges to use in controlling hemorrhage. You require as your assistants, one to give and faithfully watch the chloroform, one to sponge, a third to hand the instruments and to assist generally, and two good students to clean, dry and hand the sponges. I have found it convenient to operate in front of a good light, with a firm pillow under the patient's head; other operators have spoken very favorably of letting the child's head hang over the table, sponging out the blood as it collects in the posterior part of the pharynx. The essential steps of the operation are as follows:—

*First.* With an awl-shaped instrument, such as you here observe, holes are bored through the bone near the edge of the cleft, as seen in this drawing from life, (See Fig. II.) for passing the sutures.

*Second.* Similar holes, two on each side, are drilled through the bone along the alveolar ridge, sufficiently in front and not so far back as to interfere with the important blood-vessels, and then by means of the chisel you here observe, the parallel portion of bone is pressed or rather forced toward the median line, for the purpose of closing the cleft in the hard palate with bone and periosteal substance.

*Third.* The edges of the fissure and cleft are then thoroughly pared by means of the small straight knife and forceps, or by curved scissors.

*Fourth.* The muscles of the soft palate are then divided by use of the angular, spear-shaped knife, such as you see here.



*Fifth.* The blue and red silk threads forming the sutures are then passed alternately in the following manner, as seen in these illustrations: (See Figs. III., IV., V. and VI.)



FIG. III.

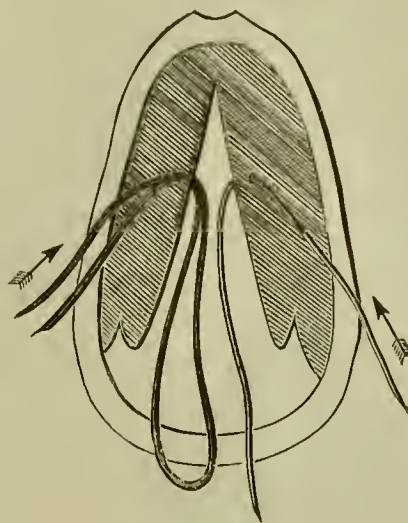


FIG. IV.

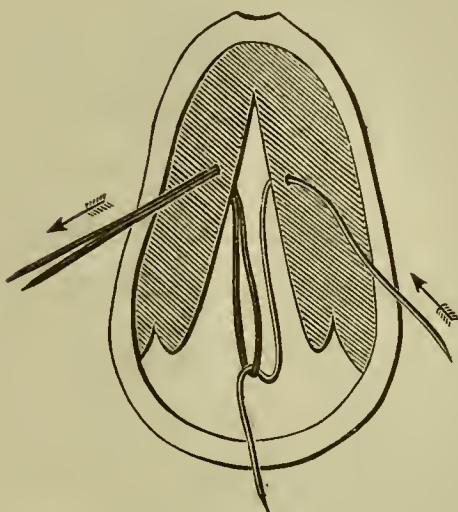


FIG. V.

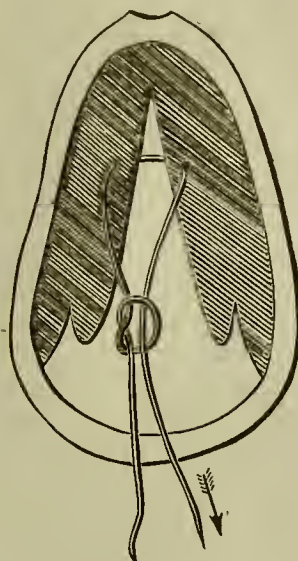


FIG. VI.

First, a blue thread is passed through the anterior hole previously made in the left side of the cleft by means of the long curved needle, as seen in this drawing, (See Figs. II. and III.) the free end drawn out singly by long forceps; next, a red thread is passed in the same manner through the hole opposite in the right side of the cleft, the loop being drawn through, and in this is engaged the end of the blue suture in order to draw it through the hole on the right side, thus completing its passage as seen in this drawing. (See Fig. VI.) In this way as many

sutures as are needed are passed, the red and blue alternating.

*Sixth.* Tying the sutures is next done by means of the slip-knot, in the following manner: a half knot is formed in one end of the suture through which the other end is passed, and then by use of the fingers only, the knot is pressed tightly down to the edge of the cleft, bringing it together, and tied twice, as may be seen in this drawing from life, (See Fig. VII.) thus closing the entire split completely in one operation.

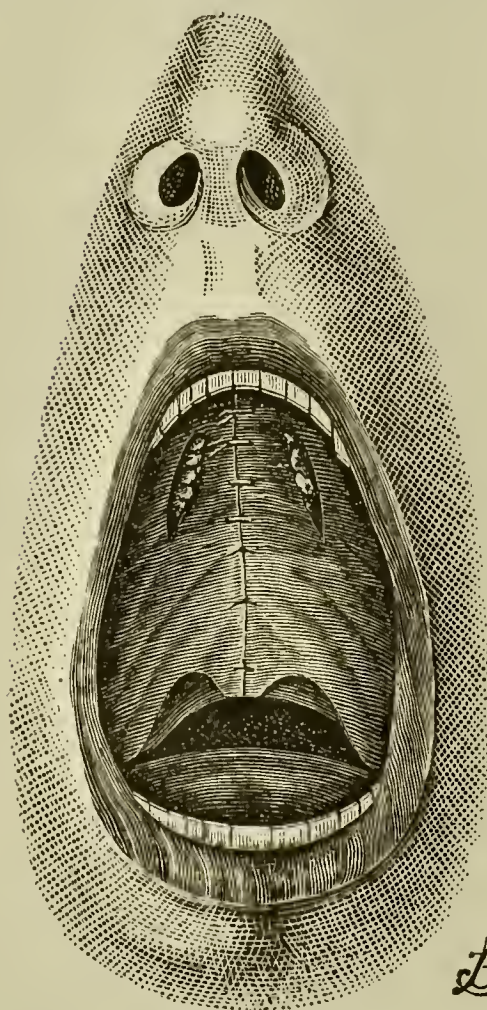


FIG. VII.

This last illustration shows you the roof of the mouth of the little girl whom I hope to show you in a few days, and which proved a success after the second operation. The knots of the sutures should all be brought to one side of the fissure and not left in the centre, for fear of their working into the fissure and preventing union. This drawing also shows you the openings in the bone near the alveolar ridge made by the awl and chisel, stuffed with lint as is recommended by Sir Wm. Fergusson, he believing that it aids in keeping the parts in apposition. These

openings soon fill with granulations. The lint after the operation should be placed there with care, that it does not loosen and cause the patient to cough, and thus put the sutures too much on the strain.

Thus you have in detail the manner of dividing the muscles of the soft palate, together with the separation of the bone along and parallel with the alveolar ridge; a method which



has brought the operation where surgeons of the present day can with great confidence assure the patient and friends of a complete success attending its performance. That more than one operation may be required in the same patient is quite true. I have known Sir Wm. Fergusson to operate as many as three times on one patient before complete success attended his efforts, and an average of two operations to the patient is quite the rule. Sometimes the opening left in the hard palate may be so small, as to be closed by sliding periosteal flaps, or by applications of nitrate of silver or nitric acid to encourage granulations sufficient: yet if the opening be of any size, it is better to split the bone a second time.

It is seldom you have any necrosis from handling the bone in this manner. In some cases there seems such a want of the soft palate, that various methods have been suggested for its increase or rather restoration. Perhaps the best is that of Simon's for the restoration of the voice, and if it proves a success, will be a great step in advance. His operation consists in bringing forward a flap from the posterior wall of the pharynx, the base downwards, the free end being turned over between the edges of the cleft in the soft palate, and sewed to them, the object being to prevent so great a volume of air escaping through the nostrils, which seems to give the nasal twang observed in speaking. For the restoration of the uvula an excellent operation has been suggested, and done, by Dr. Wm. S. Forbes, of Philadelphia.

As to the length of time required in doing the operation, you will seldom be able to do it in less than an hour, and often it will exceed this period. You should never commence giving the little patient the chloroform yourself, in fact, don't allow yourself to be seen just previous to the operation, as after it, it is desirable to not have the little one afraid of you. The mouth may not necessarily be examined for two or three

days after the operation, and then be careful and don't allow the patient to open it very wide. The stitches must be watched and removed anywhere from the fifth to the eighth day. In doing this, it is well to place the patient under the effects of chloroform, and to administer it, let the little one handle some fancy or gaily colored handkerchief on which chloroform has been sprinkled; it takes only a little to bring them under, and this little manœuver will frequently prevent a crying fit. I am in the habit of letting patients take freely of fluid food after the operation, and allow them to play around the room.

In the removal of the sutures you will find the advantage of using the colored silk, as it can be better seen. The surroundings of the patient previous to and after the operation should be good. They must be free from any cough and not exposed to diphtheria or the dangers of croup. If there be an epidemic of any throat disease in the neighborhood, I do not hesitate to postpone the operation. Every opportunity should be given for early, prompt and primary adhesion.

One word more as to the disposal of the intermaxillary bone or island as we have termed it, in cases where it does not act too much like a wedge, and especially if you are anxious as to the narrowing of the face. In many cases by a previous operation it can be pushed back in place, and made to come on a line with the upper jaw and lip. This operation consists in taking out a V-shaped portion of bone with the angular bone forceps, at the junction of the island with the vomer, then by sharp pressure breaking the bone down in position, and holding it there by means of compress and adhesive plaster. After this treatment has been continued for about ten days, the bone will remain in place, and then when required you can go on and do the operation for relief of the harelip.

Perhaps I ought to say to you that in dividing the palatopharyngeus, levator-palati and palato-glossus muscles of th



soft palate, it has been suggested to use the galvano-cautery knife, but as you do not always have this on hand, I would recommend you to rely upon the knife or scissors. Pollock laid great stress upon dividing the muscles near the hamular process. I believe you are safe in dividing them where the tension seems the greatest, also as to the incision in the posterior pillar of the fauces. In your incisions along the alveolar ridge, bear in mind the anterior and posterior palatine arteries which are to be avoided. In making these incisions it has also been suggested to use the galvano-cautery knife, and that in consequence of its not causing any hemorrhage, it is possible to do the operation on the babe. It is well for you to remember this. You may be called upon to do the operation on the infant, to prevent starvation.

Now while I believe the Sir Wm. Fergusson operation for cleft is the only proper and true treatment for congenital fissure, yet there are cases of acquired cleft, such as result from accident or specific disease, that can be treated only by means of the obdurator. And to American dentists is due the credit of having perfected this mechanical appliance. You have only to consult the latest works and periodicals on Dentistry, to acquire a full knowledge of its use. You remember in our early clinics to have seen two cases of acquired cleft, where the opening in the bone in the one case was quite large, both resulting from syphilitic necrosis. I may say that both of these cases have been treated by dentists of this city with the obdurator, and with perfect success. This is by far the best treatment for these cases. Where the cleft is the result of accident, as when for instance a boy falls on a bean-blower or some like weapon, cutting a sad gash in the roof of the mouth and an opening results, it is possible to make a better operation and one more permanent, by bringing together the periosteal flaps.

